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OOLOGIA NEERLANDICA

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„OOLOGIA NEERLANDICA"

EGGS

OF

BIRDS

BREEDING IN THE NETHERLANDS

BY

A. A. VAN PELT LECHNER

Member of the Board of the „Nederlandsche Ornithologische Vereeniging"
(Netherland Ornithological Society)

With 191 plates containing 667 objects of which 617 printed in colours and 50 in collotype, taken from specimens in the author's collection.

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I. Family CORVIDAE.

Family CORVIDAE.

(Plates 1—6).

In this family *corax*, *corone* and *frugilegus* form an oologically closely allied group, from which *monedula* deviates by the lack of one of the most typical characteristics (v. infra).

Pica which, like *glandarius*, stands more by itself, sometimes shows an approach to certain variations of the *corax* group, sometimes to those of *monedula*.

Glandarius, especially by the texture of the shell, is farthest removed from the typical Corvine character of which the *corax* group is the bearer.

I consider those eggs to be typically coloured ones of *corax*, *corone* and *frugilegus*, showing the above mentioned near kinship, of which the uppermost layer of chalk — as the results of Krukenberg's investigations give rise for us to assume to be the case — is covered by a green pigment, called biliprasin, while oorhodein occurs diffusedly in the uppermost glutinous layer; this gives to the surface of the shell a green colour (varying in shade according to the percentage of biliprasin mixed with the oocyan), with olive, frequently longitudinal markings. This type is characteristic for the *corax* group.

In the so-called *cyanic* eggs, i. e. eggs of a blue or bluish green colour, biliprasin is either wholly absent or occurs in extremely small quantities, the oocyan occurring purely or almost purely as surface colour.

The result of the examination of eggshell-mammillae of *corone*, *cornix* and *corone* × *cornix* by W. von Nathusius, gives good grounds for the suspicion that bastardization is of influence on the size of the mammillae, and that of eggs of *corone* × *cornix* this size lies between those of the two species.

In 1907 Baron R. Snouckaert van Schauburg, LL.D., obtained from the Province of Zeeland well characterized native bastard eggs (now in my collection); these eggs, in conformity with reports received from abroad respecting similar eggs, offer no external points of difference from pure *corone* or *cornix* eggs.

Family CORVIDAE.

Corvus frugilegus L. — Rook.

(Plate 1, fig. a-d).

(Snouckaert: Avifauna Neerlandica, p. 8, No. 4).

Colour of surface of shell:	green, in various variegations; blue (= cyanic) or bluish white (= leucitic objects); mostly of a lighter shade than those of *corone*.
Colour of spots:	olive in various green and brown shades; sometimes a few pitch-black spots on the outermost (glutinous) layer; when lying deeper they are of a grey appearance.
Average dimensions:	40.25 × 27 millimetres; as a rule, therefore, smaller than those of *corone*.
Average weight of shell:	1.08 grams; this smaller weight is one of the most decisive criteria for determination against *corone*.
Texture of shell:	has no special characteristic.
Shape:	oblong oval, or more shortened.
Nest:	consists of dry twigs, sticks and lumps of earth; lined with dry grass, roots, and straw, sometimes wool.
Site of nest:	by preference in very tall trees, in colonies, which are sometimes joined by jackdaws.
Number of eggs:	4—5, sometimes 6.
Breeding season:	about the middle of April—May.
Duration of incubation:	about 21 days.

Family CORVIDAE.

Corvus corax L. — Raven.

(Plate 2, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 7, No. 1).

Colour of surface of shell:	green, in various variegations; blue (= cyanic) or bluish white (= leucitic objects).
Colour of spots:	olive, in various green and brown shades; sometimes a few pitch-black spots on the outermost (glutinous) layer; when lying deeper these have a grey appearance.
Average dimensions:	48.36 × 34 millimetres.
Average weight of shell:	1.955 grams.
Texture of shell:	has no special characteristic.
Shape:	oblong ovoidal.
Nest:	consists of branches and twigs, covered with roots and lumps of earth; lined with moss, grass and wool.
Site of nest:	in the tallest trees.
Number of eggs:	4-6.
Breeding season:	beginning of March (sometimes end of February)-April.
Duration of incubation:	about 21 days.

Family CORVIDAE.

Corvus monedula L. — Jackdaw.

(Plate 3, fig. a-d).

(Snouckaert: Avifauna Neerlandica, p. 8, No. 5).

Colour of surface of shell:	bright bluish green; bluish or greenish white.
Colour of spots:	olive brown; dark brown; yellowish grey; when lying deeper they have a light grey appearance.
Average dimensions:	34 × 25 millimetres.
Average weight of shell:	0.763 gram.
Texture of shell:	has no special characteristic.
Shape:	ovoidal.
Nest:	consists of twigs, straw and similar material; lined with hair and feathers.
Site of nest:	in colonies, in towers, old buildings, ruins, chimneys, hollow trees, etc.; also amongst rookeries.
Number of eggs:	5—6.
Breeding season:	middle of April—end of May.
Duration of incubation:	about 17 days.

Family CORVIDAE.

Corvus corone L. — Crow.

(Plate 4, fig. a-d).

(Snouckaert: Avifauna Neerlandica, p. 8, No. 3).

Colour of surface of shell:	green in various variegations; blue (= cyanic) or bluish white (= leucitic objects).
Colour of spots:	olive, in various green and brown tints; sometimes a few pitch-black spots on the outside (glutinous) layer; when lying deeper these are of a grey appearance.
Average dimensions:	42.13 × 29.7 millimetres.
Average weight of shell:	1.28 grams.
Texture of shell:	has no special characteristic.
Shape:	varying between short oval, oblong oval or ovoidal.
Nest:	consists of twigs, roots, stalks, and earth or clay; lined with moss, hair, wool, feathers, rags, etc.
Site of nest:	by preference in lofty trees; in the absence of tall trees, e. g. in dunes: on the ground itself.
Number of eggs:	4—6.
Breeding season:	April—May.
Duration of incubation:	about 20 days.

Family CORVIDAE.

Pica Pica (L.) — Magpie.

(Plate 5, fig. a-d).

(Snouckaert: Avifauna Neerlandica, p. 9, No. 6).

Colour of surface of shell:	greenish or bluish white.
Colour of spots:	olive brown; when lying deeper they appear to be grey (with a faint purple tinge).
Average dimensions:	32.9 × 23 millimetres.
Average weight of shell:	0.565 gram.
Texture of shell:	has no special characteristic.
Shape:	short bellied or oblong ovoidal.
Nest:	is built of twigs and thorns; on which earth or clay, and roots, stalks, etc. are laid; the top is covered over with branches; entrance: on one side.
Site of nest:	by preference in lofty trees; also, in accordance with existing conditions, in hedges, or larger bushes; in low willows 1 to 2 metres from the ground (e. g. in the Naardermeer = Naarden Lake).
Number of eggs:	6—8.
Breeding season:	middle of April—May.
Duration of incubation:	about 18 days.

Family CORVIDAE.

Garrulus glandarius (L.) — Jay.

(Plate 6, fig. a—d).

(Snouckaert: Avifauna Neerlandica, p. 9, No. 8).

Colour of surface of shell:	greyish green.
Colour of spots:	of a greyish brown cloudy appearance; at the larger end there are often a few dark brown veinlike streaks.
Average dimensions:	31 × 23 millimetres.
Average weight of shell:	0.569 gram.
Texture of shell:	coarse.
Shape:	ovoidal.
Nest:	is made of twigs, heather, stalks and small roots.
Site of nest:	in young trees; especially in pole-wood of firs and pines.
Number of eggs:	5—7; in exceptional cases a larger number.
Breeding season:	April—May.
Duration of incubation:	about 17 days.

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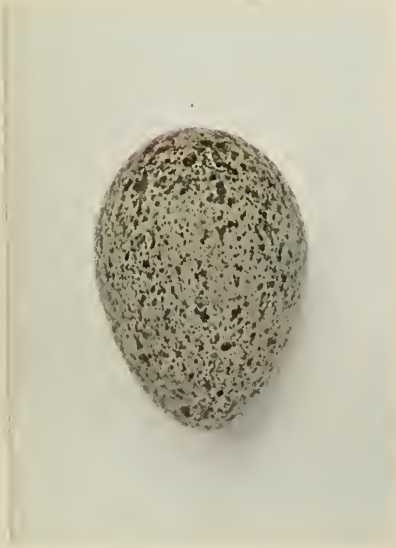
a

b



c

d

Corvus frugilegus L.

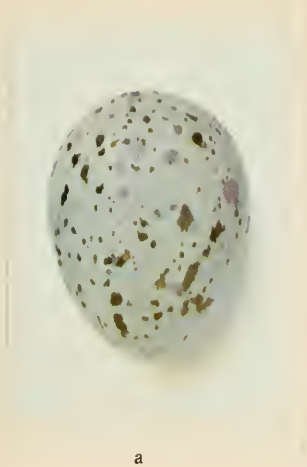
a

b

c

Corvus corax L.

Fam. CORVIDAE.



a

b

c

d

Corvus monedula L.

a

b

c

d

Corvus corone L.

Fam. CORVIDAE.

a

b

c

d

Pica pica (L.)

a

b

c

d

Garrulus glandarius (L.)

II. Family ORIOLIDAE.

Family ORIOLIDAE.

Oriolus oriolus (L.). — Golden Oriole.

(Plate 7, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 11, No. 12).

Colour of surface of shell:	white, sometimes tinged with pink. The yolk gives a soft butteryellow tint to the shells of full eggs.
Colour of spots:	dark blackish brown; when lying deeper they are of a violet grey appearance. Of eggs tinged with pink the spots blend in a light wine-red *penumbra*, thereby acquiring the character of blotches. The uppermost spots are only conglutinated very loosely with the upper layer of chalk.
Average dimensions:	30.65 × 21.37 millimetres.
Average weight of shell:	0.381 gram.
Texture of shell:	not smooth; often wrinkled transversely, and sometimes furrowed lengthways; fairly glossy.
Shape:	ovoidal.
Nest:	is built of blades of grasses, bark fibres, roots, moss, feathers, wool; frequently with addition of various other substances, such as paper, string, etc.
Site of nest:	by preference in young, smaller trees, mostly fairly high; and far from the trunks.
Number of eggs:	4—5.
Breeding season:	second half of May—June.
Duration of incubation:	about 15 days.

Fam. ORIOLIDAE.

a

b

c

Oriolus oriolus (L.)

III. Family LANIIDAE.

Family LANIIDAE.

(Plates 8, 9 and 10).

In this Family *Lanius excubitor* while deviating by a coarser texture of shell and fuller markings from the two other species which come into consideration here, shows an approach to the family *Corvidae;* the *excubitor*-egg reminds one more particularly of one of the *pica*-types.

Lanius collurio and *Lanius senator* are oologically nearly allied; no general specific distinguishing characteristic is known; however, taken as a whole, it can be said that of *senator* the type of egg with a greenish ground colour is predominant; the eggs are usually spotted more coarsely and are slightly larger; while, finally, erythrism (the occurrence of a reddish ground colour with spots in a darker shade of the same colour) seems to occur much more rarely than with *collurio.*

It has never yet been ascertained with absolute certainty that the age of the *cullorio* female birds is of influence on the colour of the egg shells, which is alleged to pass gradually from greenish to reddish; and the most recent statements of Dr. Rey on this subject do not strengthen this suspicion. Indeed, the said oologist established, in 1908, the fact of a one year old female bird sitting on eggs which

were spotted red; he ascertained, moreover, from the proportion of a large number of clutches, that the erythristic eggs (laid, according to NAUMANN's opinion, by old female birds, and largest in number) do not exceed the others in numerical strength. The fact, referred to by THIENEMANN, the Nestor of scientific oology, that he scarcely ever received other than reddish *collurio* eggs from Dalmatia, does not tend to confirm this transition hypothesis, either. It would appear to me to be more probable — as I also assume to be the case, for instance for *Cuculus canorus* — that the *cullorio* individuals belong to oologically differentiated „tribes" (gentes), of which, therefore, each has its own *type* of egg (not to be confused with variety).

For *collurio* I assume the existence of two such tribes; *within* each tribe we see a limited variation in intensity of the shell pigment proper to the type of egg.

The distinctions between the two types which I have classified are the following:

I. *Colour of shell:* varying from *whitish* to *sea green.* (The commingling of *oocyan* with carbonate of lime (+ keratin, an albuminoid) in varying proportions; oorhodein being wholly or almost wholly absent).

II. *Colour of shell:* varying from *light cream-colour* to *reddish.* (*Oorhodein*, commingled in varying proportions with carbonate of lime occurring strongly predominantly as against oocyan).

The question as to how far within each type the intensity of the colouring and marking of the shell is dependent on the age of the female birds, or whether influence is exercised thereon only, or also, by food and climate, is an open one.

The explanation given by HOCKE for the occurrence of erythrism, to the effect that it can arise from an exceptionally favourable condition of well-being of the individual birds, appears to me to

be scarcely acceptable. For the question would then be justifiable why such well-being should regularly and by preference fall to the lot of a part of the individuals of *Lanius collurio* and *Sylvia atricapilla* or, assuming that this condition prevails more generally (which may well be supposed to be the case), why it should *regularly* receive expression oologically almost exclusively *in only these two species* of the order *Oscines*.

Family LANIIDAE.

Lanius excubitor L. — Great Grey Shrike.

(Plate 8, fig. a—d).

(Snouckaert: Avifauna Neerlandica, p. 33, No. 76).

Colour of surface of shell:	dull white (only perfectly fresh objects show a light green tint), which soon becomes slightly yellow.
Colour of spots:	yellowish or greyish brown; when lying deeper they are of a grey appearance.
Average dimensions:	26.7 × 19.3 millimetres.
Average weight of shell:	0.302 gram.
Texture of shell:	rather coarse.
Shape:	mostly short-oval; when cut transversely unequal halves are produced.
Nest:	consists of vegetable material, lined with hair and feathers.
Site of nest:	in tall trees or large thornbushes, usually far from the trunk.
Number of eggs:	5—7.
Breeding season:	middle of April—May.
Duration of incubation:	about 15 days.

Family LANIIDAE.

Lanius senator L. — Woodchat Shrike.

(Plate 9, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 34, No. 77).

Colour of surface of shell:	dull greenish; brownish yellow; sometimes almost pure white or creamcoloured.
Colour of spots:	grey or greenish brown; those lying deeper are grey in appearance.
Average dimensions:	23 × 17.3 millimetres.
Average weight of shell:	0.203 gram.
Texture of shell:	fine.
Shape:	varying between short-oval, obtuse or more elongated.
Nest:	consists of vegetable material, lined with hair, feathers or wool, and embellished with green and flowering, often fragant plants.
Site of nest:	In young trees and shrubs.
Number of eggs:	5—6.
Breeding season:	May—June.
Duration of incubation:	about 14 days.

Fam. LANIIDAE.

a

b

c

d

Lanius excubitor L.

Fam. LANIIDAE.

a

b

c

Lanius senator L.

Fam. LANIIDAE.

a

b

c

d

e

f

Lanius collurio L.

Family LANIIDAE.

Lanius collurio L. — Redbacked Shrike.

(Plate 10, fig. a-f).

(Snouckaert: Avifauna Neerlandica, p. 34, No. 78).

Colour of surface of shell:	varying from whitish to sea green (type I); varying from light cream colour to reddish (type II).
Colour of spots:	olive green; yellowish; reddish brown, in various variegations; blood red (occurring exclusively in the more or less erythristic objects of type II); the spots lying deeper are of a grey appearance in all the eggs.
Average dimensions:	22 × 16.75 millimetres.
Average weight of shell:	0.186 gram.
Texture of shell:	fine.
Shape:	varying between short-oval, obtuse and more elongated.
Nest:	is built of vegetable material and is lined with hair and wool.
Site of nest:	especially in hawthorn and blackthorn shrubs; in hedges; in young conifers; up to a height of about 2 metres.
Number of eggs:	5—7 (after-set: 4—5).
Breeding season:	second half of May to middle of June.
Duration of incubation:	about 14 days.

Explanation of plate.

1, and 2: variations of type I.
3, 4, 5 and 6: „ „ „ II.

IV. Family STURNIDAE.

Family STURNIDAE.

Sturnus vulgaris L. — Starling.

(Plate 11, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 10, No. 10).

Colour of surface of shell:	light blue, slightly greenish (yolk showing through); the quantity of oocyan is sometimes so small that the colour of the shell appears to be *white*.
Average dimensions:	28.85 × 20.84 millimetres.
Average weight of shell:	0.44 gram.
Texture of shell:	clearly visible pores; furrowed lengthways.
Shape:	oblong ovoidal or short and bellied.
Nest:	consists of vegetable material, hair and feathers.
Site of nest:	in hollow trees; under roof-tiles; in holes in walls.
Number of eggs:	5—6 (after-set: 4—5).
Breeding season:	middle of April — beginning of July.
Duration of incubation:	about 14 days.

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a b

c

Sturnus vulgaris L.

V. Family FRINGILLIDAE.

Family FRINGILLIDAE.

(Plates 12—26).

I divide this family oologically into:

I. CANNABINA-group, with:
cannabina, spinus and *carduelis*.

II. COELEBS-group, with:
coelebs, pyrrhula and *chloris*.

III. COCCOTHRAUSTES.

IV. EMBERIZA-group, to be divided as follows:
a. citrinella.
b. schoeniclus, hortulana.
c. calandra.

V. PASSER-group, with:
domestica and *montana*.

The *Coelebs*- and *Cannabina*-groups are closely allied to one another by *chloris*.

As regards the colour of the shell (percentage of oocyan) *coccothraustes* could be annexed quite well to the *Coelebs*-group: moreover, a type exists the markings of which bear the character of the well known blotches with blurred edges of *coelebs*, and I am surprised to

find no attention drawn to this resemblance anywhere in oological literature; in texture of shell it is more independent; it has decidedly no correspondence with the texture of the *Emberizinae,* and I do not understand how Des Murs can give to it all the oological characters of the *Emberizinae.* If it is desired to compare the *coccothraustes*-egg, which most decidedly bears by its markings an *Emberiza*-like character, with one of the species of this group, *schoeniclus* will, in my opinion, come most into consideration for such comparison, and not *calandra* as is sometimes stated in oological literature.

For us *citrinella* is the species which is especially characterised by the so-called *Emberiza-markings,* markings for which I propose to adopt the name of „vein-markings"; German writers speak of *„Haarlinien"*.

The eggs of *schoeniclus* and *hortulana* are more strongly spotted; blotches with blurred edges, like those of *coelebs,* are found on eggs of these two species.

Calandra, though variable in markings, does not, indeed, disown the character of the genus *Emberiza* (certain variations of *citrinella, hortulana*) but deviates rather considerably in some of its types.

Passer stands oologically by itself among the *Fringillidae;* however, like the eggs of *Emberiza melanocephala Scop.* (not native) which show kinship, e. g. with those of *Passer domestica*, so also eggs of *citrinella* are sometimes found which lack the typical markings of the genus *Emberiza,* and which stand in character between the genera *Passer* and *Emberiza.*

Family FRINGILLIDAE.

Coccothraustes coccothraustes (L.) — Hawfinch.

(Plate 12, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 12, No 13).

Colour of surface of shell:	pale bluish green; yellowish green; dusky grey; greyish.
Colour of spots:	olive brown; olive green; the uppermost spots grey to very dark olive coloured blackish brown; spots, etc. lying deeper are of a violet grey appearance.
	vein-markings occur especially in the deeper shell layers; the colour of some of the spots, etc, and the manner in which they are blended, frequently give the impression as if together with the pigment an oily substance is also secreted.
Average dimensions:	24.46 × 17.5 millimetres.
Average weight of shell:	0.236 gram.
Texture of shell:	Has no special characteristic.
Shape:	varying between oblong and short ovoidal (usually strongly rounded at the base).
Nest:	consists of vegetable material, lined with small roots, and sometimes with hair or wool.
Site of nest:	higher or lower in mostly young trees, where these do not stand close together; often on or between thick branches.
Number of eggs:	5—6 (after-set: 4).
Breeding season:	end of April—June.
Duration of incubation:	about 14 days.

Family FRINGILLIDAE.

Chloris chloris (L). — Greenfinch.

(Plate 13, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 12, No. 14).

Colour of surface of shell:	bluish white; sometimes slightly yellowish.
Colour of spots:	rust coloured; dark brownish red; when lying deeper they are of a faint reddish and violet grey appearance.
Average dimensions:	20.2 × 14.5 millimetres.
Average weight of shell:	0.123 gram.
Texture of shell:	shows no special characteristic.
Shape:	mostly oblong.
Nest:	consists of vegetable material, hair and feathers.
Site of nest:	in various trees, mostly in the axil of a branch; also in shrubberies.
Number of eggs:	5—7 (after-set: 5—6).
Breeding season:	April—June.
Duration of incubation:	about 13 days.

Family FRINGILLIDAE.

Fringilla coelebs L. — Chaffinch.

(Plate 14, fig. a—d).

(Snouckaert: Avifauna Neerlandica, p. 17, No. 30).

Colour of surface of shell:	light blue; greyish blue; greyish red; reddish brown. The *coelebs*-egg presents a great variety both in colour of the surface of the shell and in markings. Some eggs show much resemblance with eggs of *chloris* and *pyrrhula.*
Colour of spots:	blackish brown; those eggs with bluish surface of shell often have fairly large spots lying deeper and of a violet grey appearance. Blotches with blurred edges, i. e.: surrounded by a lighter shade of their own colour *(penumbra),* are characteristic for the type with reddish or brownish coloured surface of shell.
Average dimensions:	19.3 × 14.6 millimetres.
Average weight of shell:	0.114 gram.
Texture of shell:	bears no special characteristic.
Shape:	varying.
Nest:	consists of vegetable material, lined with wool, feathers, horse-hair. etc.
Site of Nest:	in trees, mostly far from the trunk.
Number of eggs:	5—6 (after-set: 3—4).
Breeding season:	end of April—June.
Duration of incubation:	about 14 days.

Family FRINGILLIDAE.

Carduelis carduelis (L.) — Goldfinch.

(Plate 15, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 12, No. 15).

Colour of surface of shell:	faint bluish white.
Colour of spots:	reddish; brown; when lying deeper their appearance is a faint violet grey.
Average dimensions:	17.4 × 12.58 millimetres.
Average weight of shell:	0.085 gram.
Texture of shell:	offers no special characteristic.
Shape:	varying.
Nest:	consists of vegetable material, lined with wool, hair and seed down.
Site of nest:	in various trees, mostly rather high.
Number of eggs:	5—6 (after-set: 4—5).
Breeding season:	end of April (beginning of May) — June (beginning of July).
Duration of incubation:	about 13 days.

Family FRINGILLIDAE.

Chrysomitris spinus (L.) — Siskin.

(Plate 16, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 13, No. 16).

Colour of surface of shell:	light blue.
Colour of spots:	faint rust colour; dark brown.
Average dimensions:	15.05 × 11.78 millimetres.
Average weight of shell:	0.088 gram.
Texture of shell:	has no special characteristic.
Shape:	varying.
Nest:	consists of vegetable material, bound together with spinning material of insects, and lined with feathers, wool and seed down.
Site of nest:	mostly high up, in the tops of conifers; more rarely in alders and other broad-leaved trees.
Number of eggs:	5—6.
Breeding season:	end of April or beginning of May—June.
Duration of incubation:	about 13 days.

Family FRINGILLIDAE.

Cannabina cannabina (L). — Linnet.

(Plate 17, fig. a-d).

(Snouckaert: Avifauna Neerlandica, p. 13, No. 17).

Colour of surface of shell:	soft blue, varying in tint between bright blue and almost white.
Colour of spots:	the lowest spots are reddish dusky grey; the following ones are greenish or dull brownish red; the uppermost are dark red, purple or blackish brown.
Average dimensions:	18.25 × 13.11 millimetres.
Average weight of shell:	0.098 gram.
Texture of shell:	not specially characterized.
Shape:	strongly varying.
Nest:	consists of vegetable material, lined with hair, seed down, and sometimes with feathers also.
Site of nest:	at various heights in small firs and pines, shrubs, hedges, climbing plants, etc.; sometimes on the ground.
Number of eggs:	5—7 (after-set: 3—5).
Breeding season:	beginning of April—July.
Duration of incubation:	about 11 days.

Family FRINGILLIDAE.

Passer domestica (L.) — House-Sparrow.

(Plates 18—19, fig. a—j).

(Snouckaert: Avifauna Neerlandica, p. 18, No. 33).

Colour of surface of shell:	Pure white; bluish, sometimes greenish, white; brownish grey.
Colour of spots:	violet grey; ash-grey; brown, in various tints: greenish.
Average dimensions:	22 × 15.6 millimetres.
Average weight of shell:	0.207 gram.
Texture of shell:	not specially characterized.
Shape:	as a rule oblong ovoidal.
Nest:	consists of hay, straw, rags, hair, feathers, etc.
Site of nest:	under roofs, in holes in walls, and similar places; as an exception in trees (nest with side-entrance).
Number of eggs:	5—7 (after-set: 3—5).
Breeding season:	April—August.
Duration of incubation:	about 13 days.

Family FRINGILLIDAE.

Passer montana (L.) — Tree-Sparrow.

(Plates 20—21, fig. a—h).

(Snouckaert: Avifauna Neerlandica, p. 19, No. 34).

Colour of surface of shell:	white, sometimes slightly greenish, completely covered by the very full cloudy markings.
Colour of spots:	grey; greyish brown; reddish brown. Almost without exception every set of eggs contains at least one which differs from the others, the cloudy markings being replaced by a few large spots which leave a portion of the light coloured shell surface unmarked.
Average dimensions:	19.5 × 13.9 millimetres.
Average weight of shell:	0.159 gram.
Texture of shell:	strong.
Shape:	mostly short ovoidal.
Nest:	consists of the same material as that of which the House-Sparrow's nest is built.
Site of nest:	by preference in hollow trees; also in holes in walls, and similar cavities; sometimes under roofs.
Number of eggs:	5—6, sometimes 7 (after-set : 4—5).
Breeding season:	end of April—July.
Duration of incubation:	about 13 days.

Family FRINGILLIDAE.

Pyrrhula pyrrhula europæa (Vieillot). — Common Bullfinch.

(Plate 22, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 15, No. 24).

Colour of surface of shell:	light sky blue, slightly greenish; dull bluish.
Colour of spots:	dark violet brown; cloudy markings lying deeper are of a violet grey appearance.
Average dimensions:	19 × 14 millimetres.
Average weight of shell:	0.119 gram.
Texture of shell:	not specially characterized.
Shape:	rotund short or oblong.
Nest:	consists of vegetable material, sometimes lined with hair.
Site of nest:	in smaller trees and tall shrubs.
Number of eggs:	4—5, sometimes 6.
Breeding season:	May—July.
Duration of incubation:	about 14 days.

Family FRINGILLIDAE.

Emberiza schoeniclus L. — Reed-Bunting.

(Plate 23, fig. a-e).

(Snouckaert: Avifauna Neerlandica, p. 22, No. 43).

Colour of surface of shell:	olive brownish; brownish yellow; reddish brown yellow; greyish brown.
Colour of spots:	blackish brown, frequently with blotches with blurred edges like those of eggs of *coelebs*; when lying deeper they are of an ash-grey appearance.
Average dimensions:	19.4 × 14.5 millimetres.
Average weight of shell:	0.135 gram.
Texture of shell:	not specially characterized.
Shape:	usually short ovoidal.
Nest:	is built of dry parts of plants, lined with hair and seed down.
Site of nest:	usually near the ground, sometimes on it, but also sometimes half a metre from the ground between willow shoots standing circularly close together.
Number of eggs:	5, sometimes 6 (after-set: 3—4).
Breeding season:	May--July.
Duration of incubation:	about 13 days.

Family FRINGILLIDAE.

Emberiza citrinella L. — Yellow Bunting.

(Plate 24, fig. a—f).

(Snouckaert: Avifauna Neerlandica, p. 19, No. 36).

Colour of surface of shell:	dull white: faint reddish or bluish grey.
Colour of spots:	brown, in various variegations, sometimes very dark; pigment lying deeper is of a violet grey appearance.
Average dimensions:	21.2 × 15.9 millimetres.
Average weight of shell:	0.206 gram.
Texture of shell:	not specially characterized.
Shape:	usually short ovoidal.
Nest:	is formed of various parts of plants, lined with horse-hair.
Site of nest:	on the ground under the shelter of dense vegetation; or in bushes of diverse nature at a height of sometimes more than a metre.
Number of eggs:	5 (after-set: 3—4).
Breeding season:	April—July.
Duration of incubation:	about 14 days.

Family FRINGILLIDAE.

Emberiza hortulana L. — Ortolan.

(Plate 25, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 20, No. 39).

Colour of surface of shell:	soft ash-blue; reddish white.
Colour of spots:	dark brown, sometimes with light reddish brown *penumbra* (blotches with blurred edges). The typical markings of eggs of the *Emberiza*-genus are less prominent in this species.
Average dimensions:	20 × 15.5 millimetres.
Average weight of shell:	0.150 gram.
Texture of shell:	not specially characterized.
Shape:	varying between short-compact and more elongated.
Nest:	is built of dry parts of plants, usually lined with hair.
Site of nest:	on the ground, under the shelter of a tree or shrub, in dense vegetation; especially in corn fields.
Number of eggs:	5—6.
Breeding season:	May—June.
Duration of incubation:	about 14 days.

Family FRINGILLIDAE.

Emberiza calandra L. — Corn-Bunting.

(Plate 26, fig. a-d).

(Snouckaert: Avifauna Neerlandica, p. 19, No. 35).

Colour of surface of shell:	reddish grey; reddish yellow; sometimes slightly ash-bluish.
Colour of spots:	dark brown; yellowish brown; greyish red or brown; when lying deeper they are of a violet grey appearance.
Average dimensions:	24.5 × 17.6 millimetres.
Average weight of shell:	0.186 gram.
Texture of shell:	offers no special characteristic.
Shape:	varying between short and oblong ovoidal.
Nest:	consists of coarse vegetable material, lined with small roots and hair.
Site of nest:	on or immediately above the ground, on the sides of ditches, in arable land and hay fields.
Number of eggs:	4—6.
Breeding season:	April—July.
Duration of incubation:	about 14 days.

Fam. FRINGILLIDAE.

a

b

c

Coccothraustes coccothraustes (L.)

a

b

c

Chloris chloris (L.)

Fam. FRINGILLIDAE.

a

b

c

d

Fringilla coelebs L.

Fam. FRINGILLIDAE.

a

b

c

Carduelis carduelis (L.)

Fam. FRINGILLIDAE.

a

b

c

Chrysomitris spinus (L.)

a

b

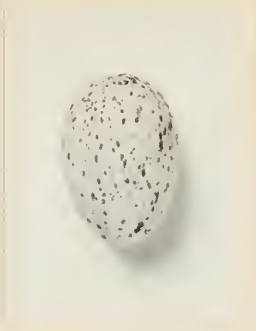
c

d

Cannabina cannabina (L.)

Fam. FRINGILLIDAE.

a



b

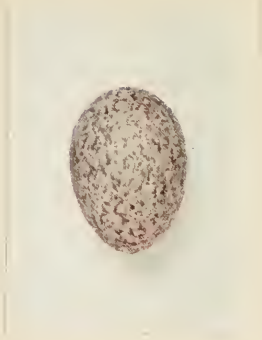
c

d

e

Passer domestica (L.)

f



g

h

i

j

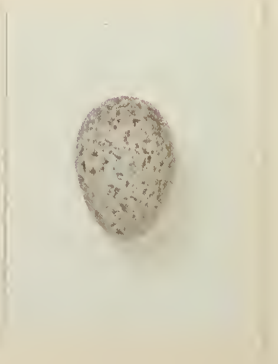
Passer domestica (L.)

Fam. FRINGILLIDAE.

a

b

c



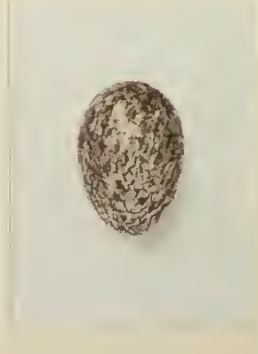
d

Passer montana (L.)

e

f

g



h

Passer montana (L.)

a

b

c

Pyrrhula pyrrhula europaea (Vieillot).

a

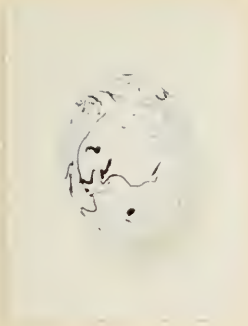
b

c

d

e

Emberiza schoeniclus L.



a

b

c

d

e

f

Emberiza citrinella L.

a

b

c

Emberiza hortulana L.

a

b

c

d

Emberiza calandra L.

VI. Family ALAUDIDAE.

VII. Family MOTACILLIDAE.

Families ALAUDIDAE and MOTACILLIDAE.

(Plates 27—36).

THIENEMANN considers the texture of the shell of *Alauda, Galerida* and *Lullula* to be nearly allied, e.g., to that of *Anthus*, but always distinguishable by a part of the pores; namely, pores which are very large and slightly flat, with a deep point in the centre, the edge being set in a granulated ring; one or more of such pores — THIENEMANN states — are to be found on every *Alauda*-egg. I have, however, I believe, also found similar pores on *Anthus trivialis*-, *pratensis*- and *campestris*-eggs; and REY does not mention this characteristic: rightly, I think.

Anthus campestris, among which *arvensis*-, *cristata*- (these two species are nearly allied) as well as *arborea*-types are found, link the *Alaudidae* and *Motacillidae* together oologically.

Among the so very diverse egg-types of *trivialis* the brown or grey thickly speckled type distinctly shows a near relationship to the genus *Alauda*.

Motacilla flava and *M. boarula*, mutually nearly allied, differ greatly oologically from *M. alba;* a careful examination of the texture of the shell and of the *nature of distribution of pigment* proved to me how nearly the first mentioned two species are allied,

oologically as well, with the genus *Anthus*, a relationship which is not immediately suspected upon making a superficial examination.

Respecting the *character of the markings of the various types of egg of Anthus trivialis* the following observations are supplementary to the class of particulars given in the short descriptive text facing the plates.

From the point of view in question I classify three types, viz:

1. with fine cloudy speckles, varying in extent down to little streaks such as occur on *Motacilla alba*-eggs.
2. more thickly mottled with coarser cloudy markings, showing much resemblance to one of the types of *Alauda arvensis*.
3. with larger spots, including blotches with blurred edges such as occur, e.g., on *Emberiza schoeniclus*-eggs.

YARRELL says: „What may perhaps be regarded as the normal „type is a ground colour of french-white so closely mottled or „speckled with deep brown as almost to hide the ground", by which he undoubtedly indicates the type referred to sub 2.

If by the word „normal", used in this quotation is meant: the average character, corresponding most to the oological character, of the genus *Anthus* and of nearly allied genera — in my opinion the only conception of importance in this case — YARRELL's view would appear to me to be correct, especially on the ground of the character of the eggs, which have since become known, of *Anthus*-species distributed throughout the whole world. Less exclusively, however, than YARRELL does, I would not only indicate „deep brown", but also *brown and grey in various shades* (like those of *Alauda arvensis*), as the colours of the markings of the most original type.

Family ALAUDIDAE.

Alauda arvensis L. — Sky-Lark.

(Plate 27, fig. a-e).

(Snouckaert: Avifauna Neerlandica, p. 23. No. 48).

Colour of surface of shell:	greenish grey; brownish; yellowish or reddish white.
Colour of spots:	brown; when lying deeper they are of a dark grey appearance. The markings mostly bear a cloudy character and cover the eggshell all over.
Average dimensions:	22.8 × 16.4 millimetres.
Average weight of shell:	0.188 gram.
Texture of shell:	bears no specific characteristic.
Shape:	when cut transversely very unequal halves are produced.
Nest:	consists of vegetable materials, lined with some horsehair.
Site of nest:	in a little hollow in the ground, in meadows and arable land.
Number of eggs:	usually 5 (after-set: 3—4).
Breeding season:	April—July (sometimes August).
Duration of incubation:	about 14 days.

Family ALAUDIDAE.

Galerida cristata (L.) — Crested Lark.

(Plate 28, fig. a-d).

(Snouckaert: Avifauna Neerlandica, p. 23, No. 46).

Colour of surface of shell:	greenish, yellowish, brownish, or greyish white.
Colour of spots:	brownish green; yellowish brown; brown; when lying deeper they are of an ash-blue appearance. They do not cover the ground colour so completely as is the case with *arvensis*. The arrangement as well as the form of the uppermost spots frequently give the impression of running *longitudinally*.
Average dimensions:	22.65 × 16.7 millimetres.
Average weight of shell:	0.191 gram.
Texture of shell:	bears no specific characteristic.
Shape:	on the whole they are distinguishable from *arvensis*-eggs by a more bellied shape.
Nest:	consists of withered parts of plants, sometimes lined with horsehair.
Site of nest:	on the ground, more on uncultivated than on cultivated land, near field-roads, etc. Sometimes on embankments, low thatched roofs, and similar sites; by preference near houses.
Number of eggs:	4—5.
Breeding season:	April—June.
Duration of incubation:	about 13 days.
Remarks:	smaller, light coloured eggs much resemble *arborea*-eggs.

Family ALAUDIDAE.

Lullula arborea (L.) — Wood-Lark.

(Plate 29, fig. a—d).

(Snouckaert: Avifauna Neerlandica, p. 23, N°. 47).

Colour of surface of shell:	dull white, frequently slightly reddish.
Colour of spots:	brown; greyish or reddish brown; when lying deeper they are of a violet grey appearance.
Average dimensions:	21 × 15.4 millimetres.
Average weight of shell:	0.155 gram.
Texture of shell:	finer than that of the genera *Alauda* and *Galerida*.
Shape:	fine ovoidal.
Nest:	is built of withered parts of plants and moss, often lined with hair or wool.
Site of nest:	in a little hollow on the ground, concealed under overhanging low plants or shrubs.
Number of eggs:	4—5 eggs.
Breeding season:	April—June.
Duration of incubation:	About 13 days.

Family MOTACILLIDAE.

Motacilla alba L. — White Wagtail.
Motacilla alba lugubris Temm. — Pied Wagtail.

(Plate 30, fig. a—f).

(Snouckaert: Avifauna Neerlandica, p. 28, Nos. 60 and 61).

Colour of surface of shell:	bluish, greyish, or greenish white; rarely yellowish white.
Colour of spots:	dark ash-grey; greyish brown; those lying deeper are of a clear ash colour.
Average dimensions:	20 × 15 millimetres.
Average weight of shell:	0.135 gram.
Texture of shell:	not specially characterized.
Shape:	varying.
Nest:	is built of vegetable materials, lined with hair, and sometimes with feathers.
Site of nest:	under tree-roots, bridges, thatched-roofs; in hollow trees (especially in or on pollard willows), wood stacks, holes in walls, etc.
Number of eggs:	5—6, sometimes 7.
Breeding season:	April—July.
Duration of incubation:	about 14 days.
Remarks:	*M. alba* and *M. lugubris* cannot be separated either oologically or nidologically.

Family MOTACILLIDAE.

Motacilla boarula L. — Grey Wagtail.

(Plate 31, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 27, No. 59).

Colour of surface of shell:	whitish, yellowish greyish or greenish; reddish brown. The ground colour is usually lighter and slightly yellower or more greenish yellow than that of *flava*-eggs.
Colour of spots:	darker variegations of the ground colour which, as a rule, inclines to a red-brown more than is the case with *flava*-eggs.
Average dimensions:	19 × 14.5 millimetres.
Average weight of shell:	0.114 gram.
Texture of shell:	bears no characteristic of its own.
Shape:	varying.
Nest:	is built of vegetable materials; the inside is finished with much more care than that of *alba*; lined with horsehair.
Site of nest:	by preference in the immediate vicinity of water; in a little hollow on the banks of brooks; in holes of walls covered with vegetation.
Number of eggs:	5, as an exception: 6 (after-set: 3—4).
Breeding season:	middle of April—July.
Duration of incubation:	about 14 days.

Family MOTACILLIDAE.

Motacilla flava L. — Blue-headed Wagtail.
Motacilla flava rayi (Bonaparte). — Yellow Wagtail.

(Plate 32, fig. a-e).

(Snouckaert: Avifauna Neerlandica, p. 26-27, Nos. 56 and 58).

Colour of surface of shell:	yellowish white; brownish yellow; greenish; reddish.
Colour of spots:	darker variegations of the ground colour.
Average dimensions:	18.7 × 13.8 millimetres.
Average weight of shell:	0.106 gram.
Texture of shell:	has no characteristic of its own.
Shape:	usually short ovoidal.
Nest:	consists of vegetable materials, lined with seed down and horsehair, sometimes also with feathers.
Site of nest:	on the ground in a little hollow, especially on the banks of ditches and trenches in arable land and meadows.
Number of eggs:	5-6.
Breeding season:	June—July.
Duration of incubation:	about 13 days.
Remarks:	one of the types shows in colour and markings as well as in size and shape a marked resemblance to certain eggs of *Calamodus schoenobaenus*. *M. flava* and *M. flava rayi* present no oological points of difference.

Family MOTACILLIDAE.

Anthus trivialis (L.) [1] — Tree-Pipit.

(Plates 33 and 34, fig. a—h).

(Snouckaert: Avifauna Neerlandica, p. 25, No. 52).

Colour of surface of shell:	greyish, reddish or bluish white; brownish; bluish; ash-blue; greyish yellow; reddish. In relevant literature mention is made in two instances (in Denmark in 1898, and in England in 1909) of a *plain sea-green* set of eggs, of the tint of *Saxicola oenanthe*-eggs.
Colour of spots:	greyish, dark, or reddish brown; red.
Average dimensions:	20 × 15 millimetres; varying fairly considerably in size.
Average weight of shell:	0.134 gram.
Texture of shell:	presents no special characteristic.
Shape:	mostly compact.
Nest:	is built of vegetable materials, especially of moss, and lined with some horsehair.
Site of nest:	on the ground in a little hollow, under the shelter of grass or bushes.
Number of eggs:	5, sometimes 6. Of each set all the eggs invariably belong to one and the same type.
Breeding season:	May—July.
Duration of incubation:	about 13 days.

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[1]) See for this species the general observations respecting the Family.

Family MOTACILLIDAE.

Anthus pratensis (L.) — Meadow-Pipit.

(Plate 35, fig. a-f).

(Snouckaert: Avifauna Neerlandica, p. 25, No. 53).

Colour of surface of shell:	greyish; brownish yellow; sometimes slightly greenish.
Colour of spots:	dark brown; a few dark coloured vein-like streaks frequently occur on the basal half.
Average dimensions:	19.1 × 14.1 millimetres.
Average weight of shell:	0.117 gram.
Texture of shell:	less glossy than that of *A. trivialis*.
Shape:	slimmer than that of *A. trivialis*.
Nest:	is built of vegetable materials and lined with hair.
Site of nest:	on the ground, concealed among grass or under bushes.
Number of eggs:	5—6.
Breeding season:	May—June.
Duration of incubation:	about 13 days.

Family MOTACILLIDAE.

Anthus campestris (L.) — Tawny Pipit.

(Plate 36, fig. a-f).

(Snouckaert: Avifauna Neerlandica, p. 25, No. 51).

Colour of surface of shell:	whitish; greenish; sometimes yellowish.
Colour of spots:	dark brown; reddish brown. The markings generally leave a large portion of the surface of the shell plain.
Average dimensions:	21 × 15.7 millimetres.
Average weight of shell:	0.157 gram.
Texture of shell:	not specially characterized.
Shape:	short-oval.
Nest:	is built of vegetable materials and lined with some horsehair.
Site of nest:	in a little hollow on the ground; under a small tree, in a bush, concealed behind a stone or a lump of earth.
Number of eggs:	4-5, sometimes 6.
Breeding season:	May—July.
Duration of incubation:	about 14 days.

a

b

c

d

e

Alauda arvensis L.

Fam. ALAUDIDAE.

a

b

c

d

Galerida cristata (L.)

Fam. ALAUDIDAE.

a

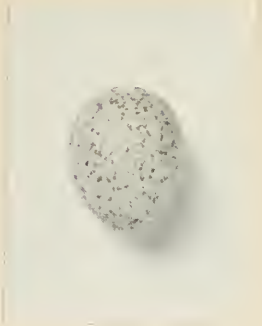
b

c

d

Lullula arborea (L.)

a



b

c

d

e

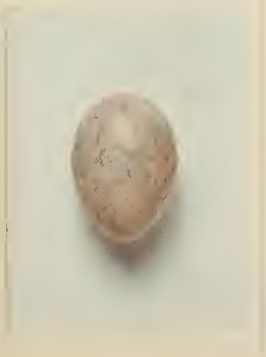
f

Motacilla alba L.
Motacilla alba lugubris Temminck.

Fam. MOTACILLIDAE.

a

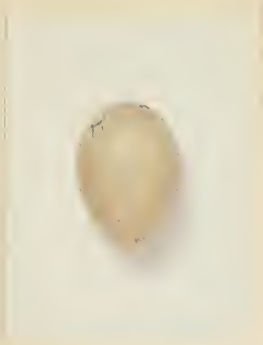
b



c

Motacilla boarula L.

Fam. MOTACILLIDAE.



a

b

c

d

e

Motacilla flava L.

Fam. MOTACILLIDAE.

a

b

c

d

Anthus trivialis (L.)

Fam. MOTACILLIDAE.

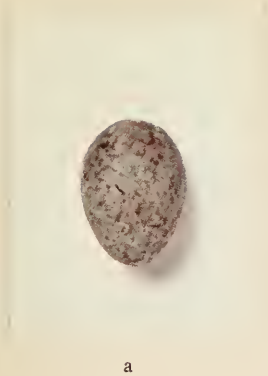
e

f

g

h

Anthus trivialis (L.)



a

b

c

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e

f

Anthus pratensis (L.)

Fam. MOTACILLIDAE.

a

b

c

d

e

f

Anthus campestris (L.)

VIII. Family CERTHIIDAE.

Family CERTHIIDAE.

Certhia brachydactyla Brehm. — Short-clawed Tree-Creeper.

(Plate 37, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 29, No. 62).

Colour of surface of shell:	milk-white.
Colour of spots:	reddish-brown, in various shades. In the zone round the thicker end of thickly spotted eggs, a few spots occur which lie deeper and are of a violet grey appearance; these constitute a characteristic which distinguishes the eggs of this species from those of *Parus cristatus mitratus*.
Average dimensions:	16.3 × 12 4 millimetres.
Average weight of shell:	0.069 gram.
Texture of shell:	not specially characterized.
Shape:	diverse.
Nest:	consists of vegetable materials, feathers and material spun by insects.
Site of nest:	in holes and crevices in trees, by preference behind the bark; behind laths and against thatched walls, and in similar places; at heights of from about 1 to 6 Metres above the ground.
Number of eggs:	6—9 (after-set: 4—7).
Breeding season:	April—beginning of June.
Duration of incubation:	about 13 days.

Fam. CERTHIIDAE.

a

b

c

Certhia brachydactyla Brehm.

IX. Family SITTIDAE.

Family SITTIDAE.

Sitta europaea caesia Wolf. — Nuthatch.

(Plate 38, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 29, No. 63).

Colour of surface of shell:	milk-white.
Colour of spots:	reddish brown, in various shades.
Average dimensions:	19.8 × 14.5 millimetres.
Average weight of shell:	0.134 gram.
Texture of shell:	presents no special characteristic.
Shape:	ovoidal.
Nest:	a heap of vegetable materials as an underlayer for the eggs.
Site of nest:	at from about 3 to 4 Metres from the ground; especially in old Woodpecker nests, the entrance of which is narrowed with earth (mixed with saliva) in proportion to the size of the own body.
Number of eggs:	6—9.
Breeding season:	end of April—June.
Duration of incubation:	about 14 days.

Fam. SITTIDAE.

a

b

c

Sitta europaea caesia Wolf.

X. Family PARIDAE.

Family PARIDAE.

(Plates 39—44).

The *Paridae* form an oologically uniform Family concerning which NEHRKORN [1]) rightly says in respect of certain species to be named hereafter: „Ein Unterschied ist durch Worte schwer zu fixieren". His next words: „Ein geübtes Auge wird indes bestimmte Unterschiede herausfinden", will apply, in my opinion, in so far that if several complete sets of eggs of *Parus coeruleus, ater, atric. rhenanus, pal. longirostris* and *crist. mitratus* are compared with one another, it can be said:

1. that *coeruleus*-eggs are usually spotted less strongly than those of the other species;
2. that the spots of *ater*-eggs are as a rule slightly larger than those of *coeruleus;*
3. that the markings of eggs of *atric. rhenanus* and *pal. longirostris* are on the whole fuller and more distinct than those of the other species.
4. that the spots of *crist. mitratus*-eggs are mostly coarser and occur more concentrated at the thicker end than is the case with most of the other species.

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[1]) A. NEHRKORN: Katalog der Eiersammlung (II. Aufl. Berlin, 1910), page 264.

Family PARIDAE.

Parus major L. — Great Titmouse.

(Plate 39, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 29, No. 64).

Colour of surface of shell:	milk-white.
Colour of spots:	reddish brown, in light and dark shades.
Average dimensions:	17.3 × 13.5 millimetres.
Average weight of shell:	0.1 gram.
Texture of shell:	not specially characterized.
Shape:	ovoidal.
Nest:	consists of vegetable materials, hair, wool and feathers.
Site of nest:	in holes in trees, walls, posts, etc.; in the sides of forsaken nests of birds of the Corvidae-family, and of Squirrel-nests, etc.
Number of eggs:	8-12 (after-set: 6-8).
Breeding season:	end of April—beginning of July.
Duration of incubation:	about 14 days.

Family PARIDAE.

Parus coeruleus L. — Blue Titmouse.

(Plate 40, fig. a-d).

(Snouckaert: Avifauna Neerlandica, p. 30, No. 65).

Colour of surface of shell:	milk-white.
Colour of spots:	reddish brown, in light and dark shades.
Average dimensions:	15.4 × 11.9 millimetres.
Average weight of shell:	0.07 gram.
Texture of shell:	not specially characterized.
Shape:	ovoidal.
Nest:	consists of vegetable materials, feathers and hair.
Site of nest:	in holes of trees, and in various other holes.
Number of eggs:	7—12 (after-set: 6).
Breeding season:	May—beginning of July.
Duration of incubation:	about 13 days.

Family PARIDAE.

Parus ater L. — Coal-Titmouse.

(Plate 41, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 30, No. 66).

Colour of surface of shell:	milk-white.
Colour of spots:	reddish brown, in light and dark shades. As a rule a more or less distinct zone occurs at the thicker ends of the eggs.
Average dimensions:	14.8 × 11.6 millimetres.
Average weight of shell:	0.064 gram.
Texture of shell:	not specially characterized.
Shape:	ovoidal, mostly pointed.
Nest:	consists of vegetable materials, hair and sometimes feathers.
Site of nest:	more or less close to the ground in holes of trees; in hollow tree stumps and roots; in mouse and rabbit holes, etc. [1])
Number of eggs:	7—10 (after-set: 6—7).
Breeding season:	May, beginning of July.
Duration of incubation:	about 13 days.
Remarks:	*Ater*-eggs cannot always be distinguished with certainty from those of *coeruleus* or of *pal. longirostris* and *atric. rhenanus*; the latter, however, are usually marked brighter and more thickly, and are considerably larger. Many *ater*-eggs are not larger than *caudatus*-eggs; but the ground colour of *ater*-eggs is of a purer white and their markings are more distinct.

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[1]) Mr. J. B. BERNINK discovered (July 1909) on one of the banks of the Dinkel a breeding place in a forsaken hole of *Riparia riparia (L).*

Family PARIDAE.

Parus palustris longirostris Kleinschm. [1]) — Parus atricapillus rhenanus Kleinschm. [2]) — Marsh-Titmice.

(Plate 42, fig. a-d).

(Snouckaert: Avifauna Neerlandica, p. 31, Nos. 68 en 69).

Colour of surface of shell:	milk-white. I have never yet noticed a *bluish green* tint which is said to disappear after the eggs have been prepared.
Colour of spots:	reddish brown, in light and dark shades; *browner,* according to BAU, than those of *ater*-and *coeruleus*-eggs.
Average dimensions:	16.1 × 12.1 millimetres.
Average weight of shell:	0.07 gram.
Texture of shell:	offers no special characteristic.
Shape:	ovoidal.
Nest:	consists of vegetable materials, hair and feathers.
Site of nest:	in holes of trees, and in hollows made by the bird itself in decayed wood.
Number of eggs:	8—10 (after-set: 6—7).
Breeding season:	May-beginning of July.
Duration of incubation:	about 13 days.
Remarks:	no good oological points of difference between *pal. longirostris* and *atric. rhenanus* are as yet known.

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[1]) No. 607 in Dr. E. HARTERT'S „Vögel der paläarktischen Fauna", (Vol. I, pag. 373).

[2]) No. 617 i. l. c. (pag. 377).

Family PARIDAE.

Parus cristatus mitratus Brehm. — Crested Titmouse.

(Plate 43, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 30, No. 67).

Colour of surface of shell:	milk-white; sometimes tinged with a very soft pink colour, in consequence of which some resemblance arises to eggs of *Certhia brachydactyla.*
Colour of spots:	reddish brown, in various shades; usually more coarsely spotted and with a more distinct zone round the thicker end than is the case with eggs of other *Parus*-species.
Average dimensions:	16.4 × 12.2 millimetres.
Average weight of shell:	0.08 gram.
Texture of shell:	not specially characterized.
Shape:	mostly short-ovoidal.
Nest:	consists of vegetable materials, hair and wool.
Site of nest:	in holes of trees, and in hollows made by the birds themselves in decayed wood; in old Magpie-and Squirrel-nests.
Number of eggs:	7-10 (after—set: 6-8).
Breeding season:	end of April—end of June.
Duration of incubation:	about 13 days.

Family PARIDAE.

Aegithalos caudatus europaeus (Hermann) — Long-tailed Titmouse.

(Plate 44, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 31, No. 71).

Colour of surface of shell:	lime-white; slightly yellowish or greyish-yellow, in dull tints.
Colour of spots:	reddish, in dull or brighter shades. The markings are frequently very obscure or altogether lacking.
Average dimensions:	14 × 11 millimetres.
Average weight of shell:	0.05 gram.
Texture of shell:	like that of the genus *Parus*.
Shape:	ovoidal.
Nest:	is built of moss, bark-fibres, small fragments of bark, and spiders' webs; lined with feathers, wool and hair; the orifice is on one side at the top of the nest.
Site of nest:	by preference against the trunk of a tree or in a fork of a branch, at various heights; sometimes in thick bushes.
Number of eggs:	9-12 (after-set: 6-8).
Breeding season:	about the middle of April—beginning of June.
Duration of incubation:	about 13 days.
Remarks:	*Caudatus*-eggs correspond in general character more to eggs of *Regulidae* than to those of *Paridae;* the texture of the shell of the first named family is however quite different.

Fam. PARIDAE.

a

b

c

Parus major L.

Fam. PARIDAE.

a

b

c

d

Parus coeruleus L.

Fam. PARIDAE.

a

b

c

Parus ater L.

a

b

c

d

Parus palustris longirostris Kleinschm.
Parus atricapillus rhenanus Kleinschm.

a

b

c

Parus cristatus mitratus Brehm.

a

b

c

Aegithalos caudatus europaeus (Hermann).

XI. Family PANURIDAE.

Family PANURIDAE.

Panurus biarmicus (L.) — Bearded Titmouse.

(Plate 45, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 32, No. 74).

Colour of surface of shell:	milk-white; sometimes strongly inclined to greyish yellow; rarely lime-white.
Colour of spots:	small dull brown or blackish brown lines and curls. In the eggs examined by me down to the inner membrane, I have not found the grey or greyish red speckles which are said by THIENEMANN to occur in the deeper layers of the shell.
Average dimensions:	17.22 × 13.91 millimetres.
Average weight of shell:	0.11 gram.
Texture of shell:	a granulation of an entirely different nature to that of *Paridae*-eggs, and standing by itself in this respect also.
Shape:	compact; when cut transversely unequal halves are produced.
Nest:	is built of withered parts of plants; chiefly of portions of reeds and reed-grass.
Site of nest:	close to the ground, between reeds or reed-grass, stinging-nettles, etc., in the midst of extensive reed and willow vegetation.
Number of eggs:	5-7 (after-set: 4-6).
Breeding season:	end of April—July.
Duration of incubation:	about 13 days.

Remarks: Oologically *biarmicus* stands quite by itself. Upon examining the various layers of the eggshell of this species I ascertained, among other matters, that only the surface of the upper layer bears spots; in the deeper layers (v. supra) I found no pigment. A deposit of pigment similar to that occurring on *biarmicus*-eggs, which I have found on the *deeper* and *deepest* layers of eggshells, for instance of *Corvidae* and *Falconidae*, and — but almost hidden to the naked eye — between and immediately under the coarser spots or cloudy markings in the higher layers of several *Passeres*-eggs, I consider to be a very *original* marking; with some species it still occurs on the surface as the typical marking, with others only as an exceptional one; in the latter case it frequently occurs that fewer layers of carbonate of lime have been deposited than normally takes place.

Fam. PANURIDAE.

a

b

c

Panurus biarmicus (L.)

XII. Family REGULIDAE.

Family REGULIDAE.

Regulus regulus (L.) — Golden-crested Wren.

(Plate 46, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 32. No. 72).

Colour of surface of shell:	grey-yellowish white, inclining either to greyish yellow or to white; sometimes slightly flesh-coloured.
Colour of spots:	greyish red and yellowish brown, shading insensibly into the ground-colour. The extremely fine cloudy markings, in a slightly darker shade of the ground-colour, frequently thickened circularly to a shadow at the basal end, characterize the eggs of this species. On eggs which are clouded more strongly or more reddish, a distinct zone is found in which spots lying deeper and of an ash-grey appearance frequently occur.
Average dimensions:	13.6 × 10.3 millimetres.
Average weight of shell:	0.04 gram.
Texture of shell:	rough to the touch.
Shape:	oblong ovoidal.
Nest:	consists mainly of various kinds of moss and of material spun by insects; lined with hair, feathers and seed-down.
Site of nest:	by preference at the ends of horizontal or drooping branches of coniferous trees, mostly fairly high; according to THYSSE sometimes also on the ground between masses of roots and in stacks of brushwood.
Number of eggs:	8—11 (after-set: 6—9).
Breeding season:	May—June.
Duration of incubation:	about 13 days.

Fam. REGULIDAE.

a

b

c

Regulus regulus (L.)

XIII. Family TROGLODYTIDAE.

Family TROGLODYTIDAE.

Anorthura troglodytes (L.) — Wren.

(Plate 47, fig. a—c).

(Snouckaert: Avifauna Neerlandica, p. 50, No. 123).

Colour of surface of shell:	milk white.
Colour of spots:	red; brownish red; rarely bright. Unspotted eggs, or eggs on which pigment spots are scarcely visible with the unaided eye, occur now and again.
Average dimensions:	16.2 × 12.2 millimetres.
Average weight of shell:	0.075 gram.
Texture of shell:	not specially characterized.
Shape:	ovoidal.
Nest:	is built of vegetable materials, especially of dry leaves and moss, and lined with hair, feathers and down (of plants). (In addition to the breeding nest, sleeping or winter-nests are also made).
Site of nest:	under tree roots; in crevices and hollows of walls and trees; in shrubs thickly covered with climbing plants; in wood-stacks, etc.
Number of eggs:	6—8, usually 7.
Breeding season:	May—July.
Duration of incubation:	about 13 days.

Fam. TROGLODYTIDAE.

a

b

c

Anorthura troglodytes (L.)

XIV. Family ACCENTORIDAE.

Family ACCENTORIDAE.

Accentor modularis (L.) — Hedge-Sparrow.

(Plate 48, fig. a-c).

(Snouckaert: Avifauna Neerlandica, p. 50, No. 122).

Colour of surface of shell:	turquoise blue; no pigment spots or speckles have ever yet been ascertained on these eggs.
Average dimensions:	19.7 × 14.5 millimetres.
Average weight of shell:	0.125 gram.
Texture of shell:	not specially characterized.
Shape:	mostly fat-bellied.
Nest:	consists of vegetable materials, especially moss; lined with hair, wool and feathers.
Site of nest:	in hedges, bushes, young coniferous trees, etc., rarely high from the ground.
Number of eggs:	5-6. (after-set: 4-5).
Breeding season:	end of April-beginning of July.
Duration of incubation:	about 13 days.
Remarks:	Compared with the eggs of *Ph. phoenicurus*, to which they show much resemblance, those of *modularis* are: 1°. purer and darker blue; 2°. fatter-bellied, the point where the two axes intersect one another being nearer the thicker end; 3°. generally slightly larger; 4°. heavier; and 5°. when light passes through them they are of a darker blue appearance.

Fam. ACCENTORIDAE.

a

b

c

Accentor modularis (L.)

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